

Claims

1. A motor vehicle ventilating device comprising a housing (3), fastening means (4) for attaching the housing (3) to the roof of the cabin of a motor vehicle (2) and a fan (5) positioned in the housing (3); the housing (3) defining a closed chamber (9) equipped with an air inlet opening (10) and at least one air outlet opening (11) for delivering to the vehicle cabin through the outlet opening (11) the air that is drawn into the housing (3) by the fan (5) through the inlet opening (10); the device (1) being characterised in that the housing (3) is defined by two half-shells (12, 13) joined to each other in airtight manner, the first half-shell (12) being designed to be attached to the cabin roof and the second half-shell (13) having the air inlet and outlet openings (10, 11) made in it; the fan (5) being an axial fan.
2. The device according to claim 1, characterised in that the air outlet opening (11) is positioned at the side of the impeller (7) in a radial direction of the impeller (7) itself.
3. The device according to claim 1, characterised in that the air outlet opening (11) is positioned at the side of the impeller (7) in a skew direction of the impeller (7) itself.
4. The device according to claim 1, characterised in that the air outlet opening (11) is positioned in the same plane as the impeller (7) in a direction parallel to but offset from the impeller (7) itself.
5. The device according to claim 1, characterised in that the first half-shell (12) has made in it a seat (18) for mounting the motor (6) of the fan (5) impeller (7).
6. The device according to claim 1, characterised in that the second half-shell (13) is equipped with mounting elements (13a) for supporting a seat (18) in which the motor (6) of the fan (5) impeller (7) can be mounted.

7. The device according to one of the foregoing claims, characterised in that it comprises diverting means (27) surrounding the axial outlet of the impeller (7) to change the direction of the forced air flow from the impeller (7) by at least 90°.

8. The device according to one of the foregoing claims, characterised in that the housing (3) has a plurality of air outlet openings (11).

9. The device according to claims 2 and 8, characterised in that the air outlet openings (11) are arranged in a circle which lies in a plane at right angles to the axis of rotation (8) of the impeller (7) and whose centre coincides with the axis (8) itself.

10. The device according to claim 9, characterised in that the air outlet openings (11) are uniformly distributed around a circular arc forming a part of said circle.

11. The device according to claim 10, characterised in that said circular arc corresponds to the transversal extension of the front and/or back seats of the vehicle (2) in which the ventilating device (1) is installed.

12. The device according to claim 10, characterised in that said circular arc subtends an angle of less than 180° at the centre.

13. The device according to claim 12, characterised in that said circular arc subtends an angle of 120° at the centre.

14. The device according to claim 13, characterised in that it comprises at least three outlet openings (11) spaced at angular intervals of 60°.

15. The device according to any of the foregoing claims from 7 to 14, characterised in that the diverting means (27) comprise a substantially cylindrical cap (28) in which the impeller (7) is housed, the cap (28) having a central axis that coincides with the

central axis of rotation (8) of the impeller (7), a bottom wall (29) facing the axial outlet of the impeller (7) and a side wall (30) with an elongated opening (32) facing the air outlet openings (11) in their entirety; the air outlet openings (11) as a whole describing an arc around the opening (32) between two longitudinal ends of the opening (32) itself.

16. The device according to claim 15, characterised in that the bottom wall (29) of the cap (28) is defined by the first half-shell (12) and the side wall (30) of the cap (28) is defined entirely or mainly by the second half-shell (13).

17. The device according to claim 15 or 16, characterised in that the elongated opening (32), in a direction parallel to the impeller (7) rotation axis (8), increases transversally in size between its longitudinal ends in the rotation direction (V) of the impeller (7) itself.

18. The device according to claim 17, characterised in that the elongated opening (32) has a trapezoidal or triangular shape in cross section so as to balance and uniformly circulate the air flowing out of the outlet openings (11).

19. The device according to any of the foregoing claims, characterised in that it comprises a safety grill (33) placed over the air inlet opening (10).

20. The device according to any of the foregoing claims, characterised in that it comprises a safety grill (34) placed over the air outlet opening (11).

21. The device according to any of the foregoing claims, characterised in that the air inlet opening (10) lies in a plane at right angles to the axis of rotation (8) of the impeller (7).

22. The device according to claim 2 or 3, characterised in that the air outlet opening (11) lies in a plane that makes a predetermined

obtuse angle with the plane in which the air inlet opening (10) lies.

5        23. The device according to claim 22, characterised in that the fastening means (4) are positioned and designed to attach the housing (3) to the vehicle cabin roof in a predetermined position such that the air inlet opening (10) lies in a substantially horizontal plane.

10       24. The device according to claim 22, characterised in that the fastening means (4) are positioned and designed to attach the housing (3) to the vehicle cabin roof in a predetermined position such that the air inlet opening (10) lies in a plane that is inclined downwardly, from the front to the back of the vehicle  
15       cabin.

25. The device according to any of the foregoing claims, characterised in that it comprises an air conduit (37) in the form of a tubular extension connected to the air inlet opening (10) and  
20       having, in turn, an opening (38) positioned and oriented in such a way as to intercept the air flowing out of a vehicle climate control system (39) in an open area of the vehicle cabin.

25       26. The device according to any of the foregoing claims, characterised in that it comprises one or more heating or cooling means consisting, for example, of heat exchangers built into the ventilating device (1) and used to produce a flow of warm or cool air or a mixture of the two.

30       27. The device according to any of the foregoing claims, characterised in that the air inlet opening (10) comprises a layer of protective material designed to prevent small objects and other foreign matter, such as hair, from being sucked into it.

35       28. The device according to any of the foregoing claims, characterised in that the air inlet opening (10) comprises a layer of sound deadening material having low resistance to air flow.

29. The device according to any of the foregoing claims, characterised in that the air outlet opening or openings (11) comprise a layer of sound deadening material having low resistance to air flow.

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30. The device according to any of the foregoing claims, characterised in that the housing (3) comprises a layer of sound-deadening material consisting, for example, of open-cell polyester or polyurethane foam.